

FAMILIAL INVESTIGATION IN SYPHILIS*

A REVIEW OF 670 FAMILIES IN WHOM THE ORIGINAL PATIENT SUFFERED FROM A FORM OF SYPHILIS OTHER THAN THE ACQUIRED CONTAGIOUS TYPE

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While numerous publications, especially in the United States of America, have dealt with the results of contact-investigation in acquired contagious syphilis, little has been written about the familial contacts of patients suffering from congenital, latent, or late acquired syphilis.

Solomon and Solomon (1922), in examining 336 marital partners of 555 patients with late acquired syphilis, found approximately 30 per cent. to be infected, and in a further analysis of one hundred families, 154 infected contacts were discovered 72.7 per cent. being unaware of their condition. Moore and Kemp (1923), in the course of examining 34 spouses of 33 neurosyphilitic patients, discovered that 25 were infected. Kemp and Poole (1925) found 64 family contacts to have syphilis among 77 examined in a series of twenty families. Finally, in 25 per cent. of 389 families, in which infection was known to have been acquired by one of the partners less than 5 years before marriage, O'Leary and Williams (1940) observed that both partners were infected; if less than 10 years had elapsed between infection and marriage, both partners in 15 per cent. of the families were infected; after an interval of more than 15 years both members were infected in only 9 per cent. of the families.

Field of Investigation

A series of 670 patients, comprising 410 women and 260 men, whose familial contacts had also been investigated, were chosen in numerical sequence from the clinic files. All latent types of syphilis were included, and the preponderance of women is explained by the fact that they sought out the social workers and were, therefore, better known by them. Initially, patients expressed willingness to cooperate in the examination of their contacts, but, as will be shown later, some ultimately demurred, mainly, we suspect, on the grounds of fear.

The study included contacts of congenital syphilis whose problems were fundamentally similar to those suffering from the acquired disease; their statistics were not recorded separately unless they were of special interest.

Method of Contact Investigation

Problems relating to the examination of contacts were usually discussed by the Chief Almoner with the patient on, or shortly after, the latter's first visit to the clinic. Where patients had already attended for some time before the inception of the contact examination scheme, this time lag exercised an important bearing on the co-operation shown by patients and their contacts, as will be subsequently demonstrated. After emphasizing the need for the medical examination of the contacts, appointments were then made for the latter to be seen, in the first instance at the venereal diseases department, but later at a special clinic, which functions concurrently with other clinics held by physicians and surgeons in the hospital out-patient department. The advantages of such a polyclinic are obvious. The special sessions are attended primarily by those with congenital syphilis, and, to a lesser extent, by patients in whom a diagnosis of syphilis has yet to be established. When this arrangement proved unacceptable to the patient, family doctors were asked to cooperate in persuading contacts to attend for examination. Contacts who could not, or would not, cooperate on the above lines had to be regarded as "negative", if serological evidence to this effect was forthcoming from other sources, such as ante-natal clinics, other hospitals, regional blood transfusion headquarters, etc.

Particulars of Original Series of Patients

Types of Syphilis.—Of 670 patients, 542 (81 per cent.) had acquired syphilis. The neurological and latent varieties proved to be the commonest types of the disease, the former accounting for 41 per cent. of men and 18 per cent. of women; a reversal of the sex predominance, to the extent of 65 per cent. in females and 30 per cent. in males, was recorded in latent syphilis (Table I, opposite).

Amongst 128 congenital syphilitics, seventy (55 per cent.) reported with interstitial keratitis, easily the commonest complication in patients older than one year; twenty (16 per cent.) of the remainder showed the latent variety of the disease (Table II, opposite).

Concomitant clinical manifestations of acquired

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TABLE I
TYPE OF ACQUIRED SYPHILIS IN ORIGINAL PATIENTS, BY SEX

Sex	Type of Acquired Syphilis											Total	
	Latent		Neurological		Tertiary		Interstitial Keratitis	Other Ocular Lesions	Cardiovascular		Osseous		Leuko-plakia
	No.	%	No.	%	No.	%			No.	%			
M	63	30	85	41	19	9	3	5	30	14	—	3	208
F	216	65	59	18	35	10	5	6	10	3	3	—	334
Total	279	51	144	26	54	10	8	11	40	7	3	3	542

TABLE II
TYPE OF CONGENITAL SYPHILIS IN ORIGINAL PATIENTS, BY SEX AND AGE GROUP

Age (yrs)	Sex	Type of Congenital Syphilis									Total
		Inter- stitial Keratitis	Other Ocular Lesions	Latent	Osseous	Neuro- logical	Cutaneous	Dental	Cardio- vascular	Tertiary	
-1	M	—	—	2	1	—	—	—	—	—	3
	F	—	—	1	2	1	2	—	—	—	6
1-15	M	10	3	5	5	1	1	—	—	—	25
	F	20	—	3	1	—	—	3	—	—	27
15+	M	19	—	2	2	1	—	—	—	—	24
	F	21	6	7	2	3	—	2	1	1	43
Total ..	M	29 (56%)	3	9 (17%)	8 (15%)	2	1	—	—	—	52
	F	41 (54%)	6	11 (14%)	5	4	2	5	1	1	76
Grand Total	..	70 (55%)	9 (7%)	20 (16%)	13 (10%)	6	3	5	1	1	128

syphilis affecting more than one system were seen in 25 patients.

Neurosyphilis co-existed with :

- cardiovascular syphilis in fifteen patients,
- bone complications in three patients,
- tertiary lesions in four patients.

Tertiary lesions co-existed with :

- cardiovascular syphilis in one patient,
- bone syphilis in one patient,
- interstitial keratitis in one patient.

Tables I and II show each of these patients under the clinical picture which prevailed at their initial examination.

Age Distribution.—As was to be expected, all patients with acquired syphilis were over 15 years of age. Adopting the Ministry of Health's age grouping of congenital syphilitics, 7 per cent. were less than 1 year of age when they first attended the department, 41 per cent. were between 1 and 15 years, and the remaining 52 per cent. were in the 15+ age group (Table II).

Source of Discovery of Disease in Original Patients

Acquired Syphilis.—The commonest channels through which patients were referred to this depart-

ment were hospitals (32 per cent.) and family doctors (33 per cent.). This statement especially applies to the men, where percentages were 42 and 40 per cent. respectively. Ante-natal clinics accounted for 37 per cent. of the women, other hospitals and family doctors for 26 per cent. and 29 per cent. respectively (Table III, opposite).

Congenital Syphilis.—Since 84 per cent. of congenital syphilitics showed active manifestations of the disease as compared with 48 per cent. of those with acquired syphilis, hospitals, especially those with eye departments, accounted for 77 per cent. of the total ; family doctors for 15 per cent. of the remainder (Table IV, opposite).

Proportion of Contacts Examined

Out of 2,284 family contacts named by 670 patients, 1,575 (69 per cent.) were tested. Of the remaining 709, 218 (10 per cent.) of the total had died (Table IV). Four had certainly suffered from syphilis, but in 108 others the cause of death could not be ascertained, and in the remaining 106 the extent to which syphilis was responsible was doubtful. Thus, 32 died from respiratory diseases, nineteen from diseases of the central nervous system, seventeen

TABLE III
MODES OF REFERRAL OF PATIENTS, BY SEX

Type of Syphilis	Sex	Channels through which Patients Reported											Total
		Other Hospitals		Own Doctor		Re-registra- tion	Ante-natal Clinic		Trans- ference from other Clinic	Contact- tracer	Came of Own Accord	Blood Trans- fusion Service	
		No.	%	No.	%		No.	%					
Acquired	M	88	42	83	40	2	—	—	14	1	19	1	208
	F	88	26	98	29	6	122	37	8	1	10	1	334
	Total	176	32	181	33	8	122	—	22	2	29	2	542
Congenital	M	46	—	3	—	1	—	—	1	—	1	—	52
	F	52	—	16	—	1	6	—	1	—	—	—	76
	Total	98	77	19	15	2	6	—	2	—	1	—	128

from cardiovascular diseases, fourteen from violence, accidentally or otherwise, eight from infectious diseases, and sixteen from alimentary and other conditions.

It is noteworthy that the mortality rate amongst the contacts of congenital syphilis was approximately two and a half times that amongst the contacts of acquired syphilis (18 per cent. as against 7 per cent.).

The 21 per cent. of the total who remained untested was roughly the same in both acquired and congenital groups. These untested contacts (491) may be accounted for as follows :

Type of Syphilis		Acquired	Congenital
		376	115
Would not cooperate	Refused point blank ..	34	24
	Broke promise to attend or alleged attendance elsewhere which could not be traced ..	17	—
	Mother did not wish to ask offspring to co-operate ..	6	1
	Total	57 (15 per cent.)	25 (22 per cent.)
Could not or need not cooperate	Not asked to cooperate *	250	57
	Whereabouts not known	31	20
	Not available : Left neighbourhood ..	24	10
	Gone abroad	14	3
	Total	319 (85 per cent.)	90 (78 per cent.)

*The principal reasons were :

- Infections acquired subsequent to birth of contact.
- Threat by patient to commit suicide.
- Contacts grown-up (approaching middle-age), had clean bill of health, and married with families of their own.

TABLE IV
RESULTS OF INVESTIGATION OF CONTACTS

Original Patients		Contacts							
Type of Syphilis	Total	Total	Dead		Tested		Untested		
			No.	%	No.	%	No.	%	
Acquired ..	542	1,724	117	7	1,231	71	376	22	
Congenital ..	128	560	101	18	344	61	115	21	
Total ..	670	2,284	218	10	1,575	69	491	21	

The higher incidence of refusal amongst congenital syphilitic contacts was probably due to the lack of cooperation shown by their parents who themselves failed to attend.

Of 376 contacts of patients with acquired syphilis who were not examined, approximately 9 per cent. absolutely refused to cooperate, because the original patient had failed to inform the family contacts as to the need for examination. One in six contacts of acquired syphilis refused examination, compared with one in four refusals amongst the contacts of congenital syphilis.

Approximately one-fifth of all the contacts examined were found to have syphilis, the incidence being almost four times greater in the contacts of patients with congenital syphilis (Table V).

TABLE V
OUTCOME OF EXAMINATION OF CONTACTS

Original Patients		Contacts							
Type of Syphilis	Total	Re-recorded	Tested		Positive		Negative		
			No.	%	No.	%	No.	%	
Acquired ..	542	1,724	1,231	71	164	13	1,067	87	
Congenital ..	128	560	344	61	164	48	180	52	
Total ..	670	2,284	1,575	69	328	21	1,247	79	

TABLE VI
INCIDENCE AND TYPE OF SYPHILIS IN INFECTED CONTACTS, BY FAMILY STATUS

Contacts						Type of Syphilis					
Sought		Examined		Infected		Latent	Neuro-logical	Cardio-vascular	Tertiary	Ocular	Other
Status	Number	No.	%	No.	%						
Husband..	321	239	74	64	27	42	7	4	2	—	9
Wife ..	208	203	98	42	21	35	5	—	—	2	—
Child ..	1,195	789	66	58	7	38	2	—	—	11	7
Father ..	127	63	50	32	51	16	6	7	—	1	2
Mother ..	130	106	82	93	88	79	4	4	4	—	2
Brother ..	136	72	53	13	18	9	1	—	—	2	1
Sister ..	167	103	62	26	25	16	1	—	1	3	5
Total ..	2,284	1,575	69	328	21	235 (72%)	26 (8%)	15 (4%)	7 (2%)	19 (6%)	26 (8%)

Table VI (above) shows the family status of the contacts. Contrasting strongly with the high percentage of women figuring either as marital contacts or as mothers of the congenitally-infected patients, was the relatively low incidence (approximately 50 per cent.) of fathers and brothers of the congenital syphilitics.

The great majority of mothers, roughly 50 per cent. of fathers, and 25 per cent. of brothers and sisters of the congenitally-infected, as well as 25 per cent. of marital partners in the case of the acquired syphilitic patients, were found "positive".

Whereas the percentage of latency amongst original patients with acquired syphilis was 51 per cent., no less than 72 per cent. of infected contacts showed this type of the disease.

Discussion

As British literature is lacking in recent records on this subject, our investigation was somewhat in the nature of an experiment. Consequently, the assessment of the result can only be tentative, an observation emphasized again and again by the various weaknesses which became only too evident as the inquiry progressed. The limited number of families under review, the absence of clinical examination of some contacts by experienced observers when reliance had to be placed mainly on negative serological evidence, and the fact that the contacts actually examined by us were too few to warrant definite conclusions, were only a few of the difficulties.

It was thought at one time that the true contact picture in this department might have been partly falsified through an indeterminate number of male patients with latent and late syphilis who registered as single men, but who were, or had been, married. If such a discrepancy existed, it must have been relatively slight as the 5 to 1 ratio of married to single men in over 400 males registering at this department with

those types of syphilis, was approximately the same ratio as that which prevailed in the corresponding age groups of males for England and Wales as a whole. The latter is assessed by the Registrar General upon the 1 per cent. Sample Tables of the 1951 census.

But for the cooperation of the personnel of the Medico-Social Unit this investigation would have been impossible and their task was by no means easy. For example, the Chief Almoner interviewed 854 patients or contacts, 95 letters were sent, and 105 telephone calls and forty visits were made to patients, contacts, family doctors, and other hospitals.

The problems associated with the work of the Medico-Social Unit personnel were threefold:

(a) The association of contact examination with the patient's fear of discovery. Oddly enough, the possibility of a "positive" contact resulting from the examination caused less fear in the mind of the patient than that associated with the prospect of approaching the contact regarding the examination. This can probably be explained by the patient's initial upset temporarily preventing him from contemplating the possibility of such an unfortunate circumstance as the discovery that the contact was infected.

(b) The prevalence of latent syphilis in the original patients, resulting in their contacts failing to realize the gravity of the disease.

(c) The difficulty experienced by the Chief Almoner in persuading the patient, at the initial interview, to arrange for the examination of the contacts at the venereal diseases department, before the polyclinic accommodation became available.

Of all the contacts examined, 1,289 (82 per cent.) were asked to come to the venereal diseases clinic, and only 34 (2 per cent.) reported at the special clinic, the latter being a recent innovation; 113 (7 per cent.) were examined elsewhere (*e.g.* other hospitals, H.M. Forces, prisons, etc.), 102 (7 per cent.) were tested by family doctors, and 37 (2 per cent.) had serological tests at ante-natal clinics.

Reference is again made to the acknowledged weakness of having no alternative but to eliminate syphilis in certain contacts solely on the grounds of serological tests carried out other than by the medical staff in the venereal diseases department.

While an analysis of the results of our contact examination emphasizes the need for this procedure being applied as a routine measure, the difficulty remains as to the best mode of approach to the patient and his contacts. Tactlessness by ill-chosen medical and/or social personnel may arouse suspicion in the contact's mind as to the true nature of the patient's illness, and the patient's dread of recriminations may prove only too well justified. The possibility of such a risk may influence the patient against cooperation in the examination of contacts, and this is especially likely to happen with the intelligent patient whose initial attendance long preceded the introduction of this scheme, and who rightly wonders why the subject is only being broached now. Our sympathies are inclined to lie with the patient when we realize that :

(a) Some of those contacts with latent syphilis may well live their allotted span suffering little or no danger to their health from the disease.

(b) Some contacts are believed to attain spontaneous recovery.

(c) Treatment of a concomitant illness by the family doctor with an enthusiastic penicillin schedule may well "cure", or at least partly arrest, the progress of the disease in the infected contact, especially if suffering from latent syphilis.

On the other hand syphilis in the contact can, if untreated, spell disaster to the future health of some and cause foetal disaster in others. Thus, 305 infected and untreated women in this series had 952 pregnancies, of which 46 (5 per cent.) resulted in congenital syphilitic infants ; after a reasonable amount of anti-syphilitic treatment had been given, 113 of these women had 300 pregnancies, none of which resulted in infected offspring. Such treatment may also have favourably influenced other statistics, as, for example, a reduction in the infant mortality rate from 11 per cent. before to 1 per cent. after treatment, and a similar reduction in the stillbirth rate from 9 to 3 per cent.

Examination of contacts at a venereal diseases clinic makes it fairly probable that both contacts and patients will learn the true nature of the disease, if indeed the latter do not already know the diagnosis. Before this investigation was begun 2 years ago, the majority were not told they had syphilis unless they asked the medical officer in the department. A reversal of this policy was deemed advisable for many reasons ; identification of the premises as a V.D. department was liable to cause distress to the patient, with possible resulting default. At the time of compiling this paper, 79 per cent. of patients knew they had syphilis, 2 per cent. had been told

they had syphilis but probably failed to understand its implications, and 1 per cent., who were congenitally-infected, were told they had syphilis but the fact that it was inherited was purposely kept from them if domestic friction was likely to ensue. The remaining 18 per cent., who were unable to appreciate the true state of affairs, comprised mainly children and the mentally impaired. With the majority of patients who knew that they had syphilis, the approach to the question of contact examination was easier.

Unexamined Contacts.—409 contacts remained unexamined for reasons which, in the main, were genuine. Many were not pressed for fear of arousing suspicion, the threat of default by patients being sufficient reason to let well alone in such cases. Where parents failed to attend, the refusal of brothers and sisters to cooperate was to be expected in instances where the original patient was a congenital syphilitic child. Adult sons did not cooperate so well as adult daughters (66 per cent. as against 71 per cent.), a circumstance probably attributable to the value of the ante-natal clinic and also perhaps to the fact that the male contacts if they felt well scorned the idea of the need for a medical examination.

Refusal on the part of the original patient to assist in family cooperation was in some instances understandable !

(a) Some mothers refused to cooperate lest a son- or daughter-in-law should realize the truth.

(b) Some mothers were reluctant to bring those offspring born before their present marriage and of different fathers.

(c) When a wife knew the nature of her husband's illness, she was less likely to attend for investigation, partly because she associated degradation and shame with the idea and also because she dreaded finding out that she was likewise infected.

Factors Influencing Family Cooperation

(a) **Parental Cooperation.**—Where the wife was the original patient and the husband was found to be infected, 96 per cent. of available family contacts cooperated, but the figure fell to 89 per cent. when the husband would not, or could not, attend. Where the wife was examined as a marital contact, 88 per cent. cooperation was obtained. The number of wives who would not, or could not attend, was too small to form any conclusions. The general picture led us to believe that the cooperation shown by sons and daughters bore no close relationship to whether the marital contact was husband or wife, or whether the marital contact was examined or not.

When the original patient was a son or daughter with congenital syphilis, mothers generally reported promptly, and with little or no effort, but, as the following results show, it made little difference whether the father was living or dead, tested or untested, infected or otherwise. Thus, 25 of 32 families were examined where the father was infected, 24 of 28 families where the father was syphilis-free, 23 of 27 families where the father was dead, and 33 of 41 families where the father was not tested (*e.g.* sixteen were not persuaded to attend on account of domestic difficulties, and valid reasons justified the non-cooperation of seventeen more).

(*b*) *Age of Original Patient.*—Where the patients were children or adults, family cooperation was forthcoming in 85 and 90 per cent. respectively; in fifteen adolescents, cooperation was obtained in thirteen families. This applied equally to both sexes, and it may be concluded that neither the age nor the sex of the original patient had any real bearing on the contacts' cooperation.

(*c*) *Type of Syphilis in Original Patient.*—In those with the acquired disease, the predominating types were latent (51 per cent.) and neurological (26 per cent.), cardiovascular and gummatous complications accounting for the majority of the remainder. Interstitial keratitis was easily the commonest presenting feature in the congenital syphilitics. These proportions apply equally to 55 patients with acquired syphilis, and to 21 congenital syphilitics, whose families refused to attend.

First impressions showed that where the patients had obvious signs of the disease, their contacts cooperated better, *i.e.* 90 per cent. of the contacts of neurosyphilitic patients cooperated as compared with 76 per cent. of the contacts of latent syphilitics. This conclusion is nullified, however, by the observation that in 31 out of 41 families where the original patient had obvious cardiovascular syphilis, the gravity of the disease had apparently failed to impress the contacts with the need for examination, as judged from their tardy appearance at the clinic.

We therefore concluded that type of syphilis present in the original patient, with especial reference to active manifestations of the disease or obvious suffering, appeared to exercise little influence upon family cooperation.

(*d*) *Original Patient's Default.*—The numbers in the various categories of default are relatively small, but it is tentatively claimed that family cooperation was related to that of the patient, *i.e.* where the

original patient cooperated whole-heartedly, the greatest response was elicited.

Attendance	No. of Patients	Families Examined	
		No.	%
Excellent	392	353	90
Good	84	77	92
Fair	125	108	86
Poor	68	55	81
Hopeless	1	1	—

(*e*) *Interval between Original Patient's Attendance and First Request for Family Examination.*—Contacts sought in 580 families where the interval was less than one year, resulted in 91 per cent. cooperation; of the remaining ninety families 77 per cent. attended where the interval varied from 14 months to over 10 years, the numbers in any one year being too small to be graded separately. The respective "refusal rates" of 9 and 23 per cent. imply that the greater the delay in seeking the contacts' cooperation, the less is the likelihood of obtaining it.

(*f*) *Place of Family Doctor.*—Personal experience has shown that 5 to 10 per cent. of patients attending this department prefer that their doctor should not know about their attendance, but it is rather significant that fully one half of those patients tend to be chronic defaulters from treatment or surveillance. It is highly desirable that the family doctor should be brought into the scheme of contact investigation as much as possible and any failure to appreciate the rarer diagnostic clinical details is more than offset by his value and willingness in the serological testing of contacts who, according to the patient, refuse to attend the hospital for complete examination. Of 142 contacts asked to report to their family doctors for investigation, 98 complied, and eleven were found to have a "strongly positive blood Wassermann reaction". Of those who failed to report, eighteen did not keep their promises and seven others eventually refused. In only fifteen instances did family doctors demur, eleven maintaining that the taking of blood specimens was a job for the expert and four telling the contacts they were too busy. In the contact examination scheme, the family doctor is an essential member of the team, but his willingness to cooperate is often nullified either by the patient failing to notify the contacts to report for examination, or by the contacts themselves failing to keep their promises to attend.

Summary and Conclusions

670 patients, comprising 542 with acquired non-contagious syphilis and 128 with inherited disease,

were asked to cooperate in having their family contacts examined.

Of 2,284 contacts named, 218 had died, death being due to syphilis in at least 4 instances, and 491 were not examined for various reasons; 1,575 were tested, mainly in the venereal diseases department.

328 contacts (21 per cent.) were found to be infected, the respective incidence in contacts of the acquired non-contagious and congenital types of syphilis being 13 per cent. (164) and 48 per cent. (164). Syphilis was detected in 88 per cent. of mothers, approximately 50 per cent. of fathers, and 25 per cent. of brothers and sisters of the congenitally-infected; 24 per cent. of spouses of those with acquired (non-contagious) syphilis were likewise infected. 247 contacts had serological examinations only, and this may well have been a weakness in our scheme, since some could have been serologically negative and yet have presented clinical manifestations of the disease, especially of the congenital type.

The prospects of family contacts reporting for examination were not necessarily improved by

(a) the attendance of both parents for examination or the possibility of both being infected,

(b) the obvious pain or discomfort suffered by the original patient who had acquired syphilis, since the response of contacts of patients with latent syphilis equalled that of contacts of those showing gross cardiovascular syphilitic disease,

(c) the presence in a large family of a congenitally-infected young patient with either severe stigmata or obvious suffering from the effects of the disease, and

(d) the age of the original patient, children eliciting no better response amongst their contacts than adults.

The prospects of contact cooperation were considerably improved when

(a) the original patient showed little or no default during treatment or surveillance,

(b) when less than 12 months had elapsed between the patient's initial attendance and the first request for contact examination,

(c) when the contact was female.

The great majority of patients should be told the nature of their disease, otherwise the discovery of the truth from a second-hand source may undermine their confidence in the venereal diseases department, with consequent default. Even when armed with this knowledge, the patient's dread of being "discovered" through contact investigation may cause him to leave his family contacts out of the picture, hoping they are uninfected, rather than run the apparently more obvious risk of grave domestic upheaval. Therefore, to be successful, a contact investigation scheme should be so designed as to remove the patient's fear. The following provisions are desirable:

(a) suitable premises, not in a venereal diseases department

(b) carefully-chosen medico-social personnel

(c) whole-hearted cooperation of family doctors, either in examining contacts or in persuading them to attend for testing.

In cases in which the disease is latent, it is all the more difficult for the infected to realize the need for their cooperation. (Latent syphilis was noted in 45 per cent. of the original patients and 72 per cent. of contacts.)

Once the patient's fear was circumvented by an essentially-practical contact-tracing scheme, the procedure attempted proved to be well worth while and likely to eliminate the undetected, infected contacts who would appear in later years with advanced manifestations of the disease.

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